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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/787,335

02/26/2004

Kelly T. Hurley

2000-0116.01/US

3984

7590

10/06/2005

David J. Paul
Micron Technology, Inc.
MS 1-525
8000 S Federal Way
Boise, ID 83716

EXAMINER

THOMAS, TONIAE M

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

FL

Office Action Summary	Application No. 10/787,335	Applicant(s) HURLEY, KELLY T.	
	Examiner Toniae M. Thomas	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>02/26/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is a first Office action on the merits of Application Serial No. 10/787,335, which is a continuation of Application Serial No. 09/905,517 filed on 13 July 2002, now US 6,706,594.
2. Currently, claims 1-6 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka et al. (US 5,994,733) in view of Shin et al. (US 2005/0023600 A1).

The Nishioka et al. patent (Nishioka) discloses a method for forming a conventional floating gate memory array (figs. 2-25 and accompanying text). The process comprises: forming a floating gate on a gate dielectric; etching column strips in the Y direction through the floating gate and gate dielectric material to form isolation trenches (fig. 8); forming insulator material within the trench and planarizing (fig. 10A); forming an intermediate dielectric and a conductive word line (fig. 11A); and etching row strips in the X direction

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through the floating gate material and gate dielectric material to define transistor gates (fig. 14B).

While Nishioka teaches forming source and drain vias to make contact with the source and drain regions (figs. 22B and col. 15, lines 48-57), Nishioka does not teach that the vias comprise tungsten and titanium nitride.

Shin et al. (Shin) discloses a method for forming a conventional floating gate memory array (figs. 13-19 and accompanying text). The method comprises forming source and drain vias to make contact with source and drain regions, wherein the vias comprise tungsten and titanium nitride (figs. 15B, 16B, par. 104, and par. 106).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to replace the polysilicon/tungsten silicide vias of Nishioka with the titanium nitride/tungsten vias of Shin because vias comprising titanium nitride/tungsten have a lower resistivity than those comprising polysilicon/tungsten silicide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toniae M. Thomas whose telephone number is (571) 272-1846. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:30 p.m.

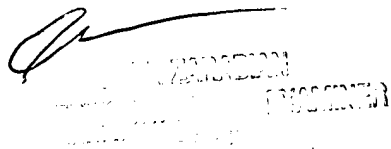
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMT

03 October 2005

A handwritten signature in black ink is written over a rectangular official stamp. The stamp contains the text "RECEIVED" and "OCT 10 2005" in a bold, sans-serif font. The signature is a cursive-style name, possibly "TMT", written in black ink.